ILLINOIS ENVIRONMENTAL PROTECTION AGENCY MEMORANDUM

DATE: October 26, 1982

TO: Land Division File

FROM: Rick Hersemann, DLPC/FOS-Central Region

SUBJECT: LPC #0418080802 - DOUGLAS COUNTY - TUSCOLA/U.S. INDUSTRIAL CHEMICALS
ILD #005078126

An inspection of the U. S. Industrial Chemicals facility in Tuscola, Illinois, was conducted on October 26, 1982. Those present during the inspection included Mr. Elmer Alsmeyer, Laboratory Superintendent; Mr. Max Miller, Technical Manager; and Mr. Joe KoronKowski and Mr. Rick Hersemann of the I.E.P.A.

The purpose of the inspection was to check U. S. Industrial Chemical's (USI) compliance with Subpart F Interim Status Standards for groundwater monitoring. USI has a surface impoundment (Snake River) which accepts hazardous wastewater. Wastewater flows west thru the surface impoundment to an overflow pipe which leads to USI's wastewater treatment plant. Once treated, the water is discharged to the Kaskaskia River. Wastewater leaving the surface impoundment for treatment usually has a pH above 2.0. USI's Part A application states that hazardous waste D002 (corrosive) and D007 (E.P. Toxic-Chromium) enters the surface impoundment.

The following information provides clarification and more detail to the Subpart F inspection checklists. Items are referenced to specific questions of Appendix A-1, A-3, B, and D checklists. Checklist items which are self-explanatory are not referenced. Checklist items needing clarification or more detail are referenced to the specific question's number.

APPENDIX A-1

2. USI has implemented an alternate groundwater monitoring program. The program consists of one upgradient well (B-4) and three downgradient wells (B-1, B-2, and B-3) screened in the uppermost saturated sand lenses underlying the facility. USI is considering these sand lenses in the saturated zone to be the uppermost aquifer underlying the facility. Three other wells (B-5, B-6, and B-7) are located east of the surface impoundment but not included in the monitoring program.

4. Three monitor wells have been installed hydraulically downgradient from the surface impoundment. However, the monitor well locations are such that they may not detect any prompt migration

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of hazardous waste from the surface impoundment. Monitor well B-1 is located approximately 2,000 feet southwest of the surface impoundment. Monitor well B-2 is located approximately 1,000 feet west of the surface impoundment. Monitor well B-3 is located approximately 3,000 feet northwest of the surface impoundment. It is questionable whether B-3 is actually downgradient from the surface impoundment. Downgradient wells should be installed closer to the waste boundary of the surface impoundment for prompt detection of migration of hazardous waste.

5a) Since USI is not a multiple hazardous waste management component, 5a) does not apply.

6. Numbers and locations of wells correspond with data in the monitoring program. Due to tubing installed in wells for sampling purposes, depths of wells were not checked.

7. Monitor wells have PVC casings with 2-inch inside diameters. The wells are screened from 10 feet below ground level (top) to 30 feet below ground level (bottom). The wells are screened to measure horizontal movement in the saturated zone. The annulus area around the screen is filled with sand. The annulus is sealed with bentonite from the top of the screen to ground surface.

8. A groundwater sampling plan is kept at the facility. Laboratory analyses from quarterly sampling were on file. Samples are collected and then analyzed at USI's laboratory for pH, specific conductance, and TOC. Samples to be analyzed for TOX are sent to Stewart Laboratory in Knoxville, Tennessee. Samples are analyzed in accordance with EPA guidelines. Proper procedures for collection, preservation, shipment, and chain of custody control are followed.

9a) USI has implemented an alternate groundwater monitoring program. Wastewater in the surface impoundment is hazardous because of corrosivity. USI's groundwater plan does not address D007 (EP Toxic-Chromium) waste going into the surface impoundment. Wastewater and sludge samples should be submitted for review. If chromium waste is entering the surface impoundment, this should be addressed in the monitoring program.

USI has asked that the requirements for sampling of parameters characterizing the suitability of the groundwater as a drinking water supply and the parameters establishing groundwater quality be waived. USI's alternate groundwater monitoring program calls for the sampling of pH, specific conductance,

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TOC, and TOX on a quarterly basis for the first year. After the first year, sampling will occur on a semi-annual basis. USI also proposes that TOX be dropped from the sampling program after the first year if none is detected in quarterly samples.

9b) USI has not completed the first year of groundwater monitoring so 9b) does not apply.

9d) & 9e) Since the first year of monitoring has yet to be completed, the annual evaluation of groundwater surface elevations, which determines if wells are properly placed, has not been completed. At this time, no modifications in the wells have been made.

10. USI has prepared a groundwater quality assessment program which will be inacted in the event hazardous waste constituents are detected in the groundwater. The program calls for the installation of four monitoring wells downgradient from the surface impoundment. Two wells will be installed in the direction of groundwater flow and two wells will be installed perpendicular to the groundwater flow. Concentrations of waste constituents in the groundwater and the rate and extent of migration will be determined. 10b) does not apply at this time.

14. USI has not submitted any quarterly analysis results to either the USEPA or the IEPA. Sample results are kept on file at the facility. Under 725.194(a)(2)B, analysis results are not required until the annual report. At this time, the annual report is not required and USI has not prepared one.

APPENDIX A-3

1. A written waiver demonstration, which requests a partial waiver of the groundwater monitoring requirements, is kept at the facility.

2. The waiver demonstration is certified by Mr. Bruce Yare, certified geologist CPG #3436.

3. Questions are addressed in more detail in Appendixes B and D.

APPENDIX B

2.1 USI has an aerial photo of the facility included in the groundwater monitoring program. Two maps of the facility, with scales of 1 inch = 1,000 feet and 1 inch = 2,000 feet, are also included. USI does not have a map of the facility with a scale

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of 1 inch = 200 feet. Significant topographic features are the Kaskaskia River west of the facility, on-site waste gypsum piles, and on-site flyash disposal area. USI also has a deep well injection facility with a surface impoundment and a wastewater treatment plant with 5 surface impoundments. Cabot Corporation, ¼ mile east of USI, has 2 deep well injection facilities and 2 surface impoundments.

2.2 USI has regional hydrogeologic information included on their maps in Section 2.1. Major areas of recharge/discharge are not indicated. Regional groundwater, which affects the hazardous waste surface impoundment, flows to the west-southwest toward the Kaskaskia River. The regional groundwater east of USI flows to the east toward the Embarrass River.

2.3 USI's plot plan consists of the two regional maps previously mentioned in 2.1. USI is not a multi-component hazardous waste facility, questions 2.3.4.1 does not apply.

2.4 USI has a site water table (potentiometric) contour map included in their groundwater plan. Groundwater flowlines are indicated. Static water elevations are shown, B-4 (686.9), B-1 (662.2), B-2 (659.7), B-3 (677.2). Upgradient well B-4 appears capable of providing representative ambient groundwater quality data. Downgradient wells B-1, B-2, and B-3 appear to be located too far from the surface impoundment to detect any prompt migration of hazardous waste.

3.1 Soil borings were drilled under the supervision of Shaffer-Krimmel-Silver of Decatur, Illinois.

3.3 Seven soil borings were made by hollow stem auger for RCRA compliance. Monitor wells were installed in each of the seven soil borings.

3.4 See Table B-1.

3.5 Lithologic samples were collected during the drilling by split spoon and shelby tube sampling. It is unknown at what interval the samples were collected.

4.3 Well construction information is provided in Table B-2. Wells were constructed with 2-inch diameter threaded PVC casing. Well screens are packed with sand. Seals are approximately 5 feet thick. The wells have locking protective steel stand pipes cemented in place. An attempt to develop the wells by air lift pumping was made, however the wells went dry.

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5.1 No geologic cross sections of the surface impoundment were included in the groundwater program. The depth of the surface impoundment is not indicated in the program.

5.2 USI's facility is underlain by approximately 100 feet of glacial till. Permeability of the clay tills range from 1.1×10^{-8} to 7.1×10^{-9} cm/sec. Permeability of gravelly clays 10 feet below ground surface range from 2.4×10^{-8} to 7.1×10^{-9} cm/sec. The uppermost saturated zone is sand lenses within glacial till clays.

5.3 Static water levels are measured by an electric water sounder at the time of sampling. Seasonal fluctuations in the static water levels occur which should not alter groundwater gradients and flow directions. At USI's facility a horizontal flow in the saturated zone is more likely to occur than a vertical flow.

5.4 Aquifer hydraulic properties were determined by falling head tests. Horizontal groundwater flow velocity was determined to be 0.1 foot/day to the west toward the Kaskaskia River.

7.2 Monitor wells are sampled by a peristaltic pump. Each monitor well has a tygon tube which connects to the sampling pump. This eliminates cross contamination of samples.

8.0 Samples are collected and placed in the proper preservation bottles. Samples are delivered to the USI laboratory along with a lab sheet containing the proper chain of custody. Samples are refrigerated until time of analysis.

9.1 USI's laboratory analyzes samples for pH, specific conductance, and TOC. Stewart Laboratory in Knoxville, Tennessee analyzes samples for TOX.

9.5 USI's alternate groundwater monitoring program samples for pH, specific conductance, TOC, and TOX only. Drinking water suitability parameters and groundwater quality parameters are not tested for in this alternate program.

9.7 USI does not have a section in their monitoring plan which records information about each sample collected. No field logs are on file. Copies of the laboratory results were on file.

9.8 USI has not submitted any analysis reports to USEPA or IEPA. Analysis reports to be submitted in annual report.

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10.0 Site verification of USI's facility was made by physically inspecting the area around the surface impoundment. The surface impoundment and monitor wells were checked for verification. All items correspond to plot plan.

An inspection of the surface impoundment showed a scum, composed of oil and polyethylene cubes, floating on the surface. Three wastewater inlet pipes enter the surface impoundment from the east. A check of these waste streams with a pH meter showed pH's of 1.87, 1.79, and 6.72. The wastewater flows west through the surface impoundment to an overflow outlet pipe which leads to the wastewater treatment plant. A check of the water leaving the surface impoundment through the overflow pipe showed a pH of 1.99. According to Mr. Alsmeyer, the pH is usually over 2.0 when the water leaves the surface impoundment. USI does not use any treatment in the surface impoundment to neutralize the wastewater. Mr. Alsmeyer stated that they did not have analysis results for the waste streams entering the surface impoundment. USI samples the water at the wastewater treatment plan per NPDES permit. The west end of the surface impoundment is diked. Water level in the surface impoundment was several feet below ground level.

The locations of the four monitor wells corresponds to the plot plan. Measurements of depth to water and total depth of wells was not made due to sampling tubing located in the wells. Water level in well B-4 was estimated to be 5 feet below ground level.

APPENDIX D

1.0 Tuscola, Illinois, receives some of its water supply from Silurian dolomites. The withdrawal rate from this aquifer is unknown. The majority of Tuscola's water supply comes from surface water. Wastewater is injected into the Eminence-Potosi dolomite formation at rates of 230-300 gallons per minute from both USI's and Cabot Corporation's deep well injection facilities.

1.2 USI does not have a map of the facility with a scale of 1 inch = 200 feet. Scales of maps are 1 inch = 1,000 feet and 1 inch = 2,000 feet. Downgradient monitor wells are located over 1,000 feet from the boundary of the surface impoundment. This will not allow prompt detection of migration of hazardous waste from the surface impoundment. Monitor wells located closer to the waste boundary should be installed.

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1.3 Seven soil borings were made at USI's facility. Subsurface material was described under the Unified Soil Classification System. Soil borings indicated low permeability layers beneath the facility. No geologic cross-sections were included.

2.0 USI's surface impoundment is excavated into the natural glacial till deposits. No special engineering features have been designed for the impoundment to minimize the migration of leachate. Waste is not stabilized or neutralized in the surface impoundment. Wastewater was found to be leaving the surface impoundment for treatment at the wastewater treatment plant with a pH of 1.99.

3.0 Information concerning precipitation data, evapotranspiration data, runoff data, and infiltration data was not included in USI's groundwater program.

4.0 Since the water table is very high at USI's facility, the unsaturated zone is not addressed. USI's surface impoundment is in contact with the saturated zone. The pH of the material in the saturated zone is 7.5 to 8.0. According to USI, the acidic wastewater will be neutralized by the alkaline groundwater and subsurface materials. The cation exchange of the subsurface soils is high, 80-85 meq/100 gram calcium.

5.0 Hydrologic properties of the saturated zone were determined by soil permeabilities and falling head tests. Leakage from the entire area of the lagoon was calculated to be 2.3 gallon/day vertically and 80 gallon/day horizontally. Falling head tests were performed on Borings B-2, B-5, and B-6. The tests showed the horizontal permeability to be greater than the vertical. Horizontal permeability ranged from 0.7×10^{-5} to 2.2×10^{-5}. The flow velocity of this horizontal movement was calculated to be 0.1 foot/day to the west toward the Kaskaskia River.

5.8 Water quality analyses were not performed on monitor wells to establish background data. Information gathered from wells in the area indicated the quality of the water to be poor. Groundwater in the area is alkaline.

6.0 No computer modeling was used.

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SUMMARY

USI's alternate groundwater monitoring program is inadequate and in non-compliance with the 35 Illinois Administrative Code, Part 725.191 (40 CFR 265.91), 725.192 (40 CFR 265.92), of Subpart F -- Groundwater Monitoring.

To comply with 725.191, more geologic information is needed concerning the surface impoundment and its affect on the uppermost aquifer underlying the facility. Information needed for evaluation includes:

1. Geologic cross-sections of facility

2. Map of facility with a scale of 1 inch = 200 feet showing the location of:

   a. surface impoundment
   b. monitor wells
   c. contour lines
   d. surface water and drainage

Also the downgradient wells are located too far from the waste boundary of the surface impoundment. Three downgradient wells should be installed to comply with 725.191 in a manner that "their number, locations and depths must ensure that they immediately detect any statistically significant amounts of hazardous waste or hazardous waste constituents that migrate from the waste management area to the uppermost aquifer".

USI's alternate groundwater monitoring program waives the sampling of parameters which establish groundwater quality and parameters which characterize the suitability of the groundwater as a drinking water supply. To waive these requirements of 725.192, analysis results should be submitted of waste streams entering the surface impoundment and the sludge at the bottom of the surface impoundment. Analysis results would confirm whether the surface impoundment was hazardous solely because of corrosivity or whether another hazardous waste was entering the impoundment. The analysis results should also aid in evaluating whether the alternate sampling program of pH, specific conductance, TOC, and TOX is valid or not.

RAH/cp

cc: ~~DLPC~~/FOS, Central Region (2)
USEPA/Region V

Douglas Co. LPC # 04180802
Tuscola / U.S. Industrial Chemicals Co.

APPENDIX A-1

FACILITY INSPECTION FORM FOR COMPLIANCE WITH INTERIM STATUS STANDARDS COVERING GROUND-WATER MONITORING

Company Name: U.S. Industrial Chemicals EPA I.D. Number: 005078126

Company Address: P.O. Box 218 ; Inspector's Name: Rick Hersemann

Tuscola, IL. 61953

Company Contact/Official: Elmer Alsmeyer ; Branch/Organization: _____

Title: Laboratory Superintendent ; Date of Inspection: 10/26/82

	Yes	No	Unknown	Waived
Type of facility: (check appropriately)				
a) surface impoundment	X			
b) landfill				
c) land treatment facility				
d) disposal waste pile*				
Ground-Water Monitoring Program				
1. Was the ground-water monitoring program reviewed prior to site visit? If "No",		X		
a) Was the ground-water program reviewed at the facility prior to site inspection?		X		
2. Has a ground-water monitoring program (capable of determining the facility's impact on the quality of groundwater in the uppermost aquifer underlying the facility) been implemented? 265.90(a)	X			

*Listed separate from landfill for convenience of identification.

cc: DLPC/Division File
DLPC/Central Region (2) ✓
USEPA / Region V

	Yes	No	Unknown	Waived
3. Has at least one monitoring well been installed in the uppermost aquifer hydraulically upgradient from the limit of the waste management area? 265.91(a)(1)	X			
a) Are ground-water samples from the uppermost aquifer, representative of background ground-water quality and not affected by the facility (as ensured by proper well number, locations and depths?)	X			
4. Have at least three monitoring wells been installed hydraulically downgradient at the limit of the waste handling or management area? 265.91(a)(2)	X			
a) Do well number, locations and depths ensure prompt detection of any statistically significant amounts of HW or HW constituents that migrate from the waste management area to the uppermost aquifer?	X			
5. Have the locations of the waste management areas been verified to conform with information in the ground-water program?	X			
a) If the facility contains multiple waste management components, is each component adequately monitored?	NA			
6. Do the numbers, locations, and depths of the ground-water monitoring wells agree with the data in the ground-water monitoring system program? If "No", explain discrepancies.	X			
7. Well completion details. 265.91(c)				
a) Are wells properly cased?	X			
b) Are wells screened (perforated) and packed where necessary to enable sampling at appropriate depths?	X			
c) Are annular spaces properly sealed to prevent contamination of ground-water?	X			

	Yes	No	Unknown
8. Has a ground-water sampling and analysis plan been developed? 265.92(a)	X		
a) Has it been followed?	X		
b) Is the plan kept at the facility?	X		
c) Does the plan include procedures and techniques for:			
1) Sample collection?	X		
2) Sample preservation?	X		
3) Sample shipment?	X		
4) Analytical procedures?	X		
5) Chain of custody control?	X		
9. Are the required parameters in ground-water samples being tested quarterly for the first year? 265.92(b) and 265.92 (c)(1)		X	
a) Are the ground-water samples analyzed for the following:			
1) Parameters characterizing the suitability of the ground-water as a drinking water supply? 265.92(b)(1)		X	
2) Parameters establishing ground-water quality? 265.92(b)(2)		X	
3) Parameters used as indicators of ground-water contamination? 265.92(b)(3)	X		
(i) For each indicator parameter are at least four replicate measurements obtained at each upgradient well for each sample obtained during the first year of monitoring? 265.92(c)(2)	X		
(ii) Are provisions made to calculate the initial background arithmetic mean and variance of the respective parameter concentrations or values obtained from the upgradient well(s) during the first year? 265.92(c)(2)	X		
b) For facilities which have completed first year ground-water sampling and analysis requirements:			
1) Have samples been obtained and analyzed for the ground-water quality parameters at least annually? 265.92(d)(1)	NA		
2) Have samples been obtained and analyzed for the indicators of ground-water contamination at least semi-annually? 265.92(d)(2)	NA		

	Yes	No	Unknown
c) Were ground-water surface elevations determined at each monitoring well each time a sample was taken? 265.92(e)	X		
d) Were the ground-water surface elevations evaluated annually to determine whether the monitoring wells are properly placed? 265.93(f)	NA		
e) If it was determined that modification of the number, location or depth of monitoring wells was necessary, was the system brought into compliance with 265.91(a)? 265.93(f)	NA		
10. Has an outline of a ground-water quality assessment program been prepared? 265.93(a)*	X		
a) Does it describe a program capable of determining:			
1) Whether hazardous waste or hazardous waste constituents have entered the ground water?	X		
2) The rate and extent of migration of hazardous waste or hazardous waste constituents in ground water?	X		
3) Concentrations of hazardous waste or hazardous waste constituents in ground water?	X		
b) After the first year of monitoring, have at least four replicate measurements of each indicator parameter been obtained for samples taken for each well? 265.93(b)	NA		
1) Were the results compared with the initial background means from the upgradient well(s) determined during the first year?	NA		
(i) Was each well considered individually?	NA		
(ii) Was the Student's t-test used (at the 0.01 level of significance)?	NA		
2) Was a significant increase (or pH decrease as well) found in the:			
(i) Upgradient wells	NA		
(ii) Downgradient wells			
If "Yes", Compliance Checklist A-2 must also be completed.			

*See note Page 2-10

	Yes	No	Unknown
11. Have records been kept of analyses for parameters in 265.92(c) and (d)? 265.94(a)(1)	X		
12. Have records been kept of ground-water surface elevations taken at the time of sampling for each well? 265.94(a)(1)	X		
13. Have records been kept of required elevations in 265.93(b)? 265.94(a)(1)	X		
14. Have the following been submitted to the Regional Administrator 265.94(a)(2) :*			
a) Initial background concentrations of parameters listed in 265.92(b) within 15 days after completing each quarterly analysis required during the first year?		X	
b) For each well, have any parameters whose concentrations or values have exceeded the maximum contaminant levels allowed in drinking water supplies been separately identified?		X	
c) Annual reports including:			
1) Concentrations or values of parameters used as indicators of ground-water contamination for each well along with required evaluations under 265.93(b)?		X	
2) Any significant differences from initial background values in up-gradient wells separately identified?		X	
3) Results of the evaluation of ground-water surface elevations?		X	

*EPA will be proposing (Spring 1982) to replace this reporting requirement with an exception reporting system where reports will be submitted only where maximum contaminant levels or significant changes in the contamination indicators or other parameters are observed. EPA has delayed compliance stage for 14 a) above until August 1, 1982 (Federal Register, February 23, 1982, p.7841-7842) to be coupled with exception reporting in the interim.

APPENDIX A-3

INSPECTION COMPLIANCE FORM FOR DEMONSTRATING
A WAIVER OF INTERIM STATUS REQUIREMENTS

Company Name: U.S. Industrial Chemicals; EPA I.D. Number: 005078126

Company Address: P.O. Box 218; Inspector's Name: Rick Hersemann
Tuscola, IL 61953

Company Contact: Elmer Alsmeyer; Branch/Organization: _____

Title: Laboratory Superintendent; Date of Inspection: 10/26/82

	Yes	No	Unknown
1. Is a written waiver demonstration kept at the site?	X		
2. Is the demonstration certified by a qualified geologist or geotechnical engineer? 265.90(c)	X		
3. Does the waiver demonstration establish:			
a) The potential for migration of hazardous waste or hazardous waste constituents from the facility to the uppermost aquifer? 265.90(c)(1)	X		
b) An evaluation of a water balance including:			
1) Precipitation?	X		
2) Evapotranspiration?	X		
3) Runoff?	X		
4) Infiltration? (including any liquid in surface impoundments)	X		
c) Unsaturated zone characteristics?	X		
1) Geologic materials?	X		
2) Physical properties?	X		
3) Depth to ground water?	X		

	Yes	No	Unknown
d) The potential for hazardous waste or hazardous waste constituents which may enter the uppermost aquifer to migrate to a water supply well or surface water, by evaluation of: 265.90(c)(2)			
1) Saturated zone characteristics, including:			
(a) Geologic materials?	X		
(b) Physical properties?	X		
(c) Rate of ground-water flow?	X		
2) Proximity of the facility to water supply wells or surface water?	X		

APPENDIX B

GROUND-WATER MONITORING AND ALTERNATE SYSTEM
TECHNICAL INFORMATION FORM

1.0 Background Data:

Company Name: U.S. Industrial Chemicals; EPA I.D.#: 005078126

Company Address: P.O. Box 218
Tuscola, IL. 61953

Inspector's Name: Rick Herseмann; Date: 10/26/82

1.1 Type of facility (check appropriately):

1.1.1	surface impoundment	X
1.1.2	landfill	
1.1.3	land treatment facility	
1.1.4	disposal waste pile	

1.2 Has a ground-water monitoring system been established? (Y/N) Y

1.2.1 Is a ground-water quality assessment program outlined or proposed? (Y/N) Y

If Yes,

1.2.2 Was it reviewed prior to the site visit? (Y/N) N

1.3 Has a ground-water quality assessment program been implemented or proposed at the site? (Y/N) N

If yes, Appendix C, Ground-Water Quality Assessment Program Technical Information Form must be utilized also.

2.0 Regional/Facility Map(s)

2.1 Is a regional map of the area, with the facility delineated, included? (Y/N) Y

If yes,

2.1.1 What is the origin and scale of the map? Aerial Photo
Two maps included - scales 1"= 1000', 1" = 2,000'

2.1.2 Is the surficial geology adequately illustrated? (Y/N) Y

2.1.3 Are there any significant topographic or surficial features evident? (Y/N) Y

If yes, describe Kaskaskia River west of facility; Waste gypsum piles and flyash disposal area on-site

2.1.4 Are there any streams, rivers, lakes, or wet lands near the facility? (Y/N) Y

If yes, indicate approximate distances from the facility Hazardous Waste impoundment, impoundment at deep well operation, 5 impoundments at water treatment plant, 2 impoundments at Cabot Corp.

2.1.5 Are there any discharging or recharging wells near the facility? (Y/N) Y

If yes, indicate approximate distances from the facility. Deep well injection facility onsite 2 Deep well disposal wells located at Cabot Corp. adjacent to facility.

2.2 Is a regional hydrogeologic map of the area included? (This information may be shown on 2.1) (Y/N) Y

If yes:

2.2.1 Are major areas of recharge/dishcarge shown? (Y/N) N

If yes, describe. _____

2.2.2 Is the regional ground-water flow direction indicated? (Y/N) Y

2.2.3 Are the potentiometric contours logical? (Y/N) Y
If not, explain. _____

2.3 Is a facility plot plan included? (Y/N) Y

2.3.1 Are facility components (landfill areas, impoundments, etc.) shown? (Y/N) Y

2.3.2 Are any seeps, springs, streams, ponds, or wetlands indicated? (Y/N) Y

2.3.3 Are the locations of any monitoring wells, soil borings, or test pits shown? (Y/N) Y

2.3.4 Is the facility a multi-component facility? (Y/N) N

If yes:

2.3.4.1 Are individual components adequately monitored? (Y/N) NA

2.3.4.2 Is a Waste Management Area delineated? (Y/N) Y

2.4 Is a site water table (potentiometric) contour map included? (Y/N) Y

If yes,

2.4.1 Do the potentiometric contours appear logical based on topography and presented data? (Consult water level data) (Y/N) Y

2.4.2 Are groundwater flowlines indicated? (Y/N) Y

2.4.3 Are static water levels shown? (Y/N) Y

2.2.4 May hydraulic gradients be estimated? (Y/N) Y

2.4.5 Is at least one monitoring well located hydraulically upgradient of the waste management area(s)? (Y/N) Y

2.4.6 Are at least three monitoring wells located hydraulically downgradient of the waste management area(s)? (Y/N) Y

2.4.7 By their location, do the upgradient wells appear capable of providing representative ambient groundwater quality data? (Y/N) Y

If no, explain. _____

3.0 Soil Boring/Test Pit Details

3.1 Were soil borings/test pits made under the supervision of a qualified professional? (Y/N) Y

If yes,

3.1.1 Indicate the individual(s) and affiliation(s): Shaffer - Krimmel - Silver
2900 N. Broadway P.O Box 2233 Decatur, IL. 62526

3.1.2 Indicate the drilling/excavating contractor, if known Shaffer - Krimmel - Silver

3.2 If soil borings/test pits were made, indicate the method(s) of drilling/excavating:

- Auger (hollow or solid stem) X
- Mud rotary
- Air rotary
- Reverse rotary
- Cable tool
- Jetting
- Other, including excavation (explain)

3.3 List the number of soil borings/test pits made at the site

3.3.1 Pre-existing 0

3.3.2 For RCRA compliance 7

3.4 Indicate borehole diameters and depths (if different diameters and depths use TABLE B-1).

3.4.1 Diameter: Borehole diameter is unknown - 2 inch wells

3.4.2 Depth: All wells are approximately 30 feet deep

3.5 Were lithologic samples collected during drilling? (Y/N) Y

If yes,

3.5.1 How were samples obtained? (Check method(s))

- Split spoon X
- Shelby tube, or similar X
- Rock coring
- Ditch sampling
- Other (explain)

INFORMATION TABLE B-1

BORING NO.	DEPTH	DIAMETER
B-1	30.0 Ft.	
B-2	29.9 Ft.	
B-3	30.1 Ft.	
B-4	29.4 Ft.	
B-5	30.1 Ft.	
B-6	30.0 Ft.	
B-7	29.7 Ft.	

3.5.2 At what interval were samples collected? Unknown

3.5.3 Were the deposits or rock units penetrated described? (boring logs, etc.) (Y/N) Y

3.6 If test pits were excavated at the site, describe procedures. None excavated.

4.0 Well Completion Detail

4.1 Were the wells installed under the supervision of a qualified professional? (Y/N) Y

If yes:

4.1.1 Indicate the individual and affiliation, if known
Shaffer - Krimmel - Silver
Decatur, IL.

4.1.2 Indicate the well construction contractor, if known
Schaffer - Krimmel - Silver
Decatur, IL.

4.2 List the number of wells at the site

4.2.1 Pre-existing 0

4.2.2 For RCRA Compliance 7

4.3 Well construction information (fill out INFORMATION TABLE B-2)

4.3.1 If PVC well screen or casing is used, are joints (couplings):

- Glued on
- Screwed on X

4.3.2 Are well screens sand/gravel packed? (Y/N) Y

4.3.3 Are annular spaces sealed? (Y/N) Y

If yes, describe:

- bentonite slurry X
- Cement grout X
- Other (explain) _____

_____

- Thicknesses of seals Approximately 5 Ft.

4.3.4 If "open hole" wells, are the cased portions sealed in place? (Y/N) NA

If yes, describe how: _____

_____

_____

4.3.5 Are there cement surface seals? (Y/N) Y

If yes,

- How thick? _____

4.3.6 Are the wells capped? (Y/N) Y

If yes,

- Do they lock? (Y/N) Y

4.3.7 Are protective standpipes cemented in place? (Y/N) Y

4.3.8 Were wells developed? (Y/N) N

If yes, check appropriate method(s):

- Air lift pumping X
- Pumping and surging ____
- Jetting ____
- Bailing ____
- Other (explain) _____

_____

5.0 Aquifer Characterization

5.1 Has the extent of the uppermost saturated zone (aquifer) in the facility area been defined? (Y/N) Y

If yes,

5.1.1 Are soil boring/test pit logs included? (Y/N) Y

5.1.2 Are geologic cross-sections included? (Y/N) N

INFORMATION TABLE B-2

	WELL NO.	B-1	B-2	B-3	B-4	B-5	B-6	B-7
	GROUND ELEVATION	671.6	678.3	682.5	691.7	693.9	690.6	688.5
	TOTAL DEPTH	30.0	29.9	30.1	29.4	30.1	30.0	29.7
WELL CASING	TYPE MATERIAL	PVC	PVC	PVC	PVC	PVC	PVC	PVC
	DIAMETER	2"	2"	2"	2"	2"	2"	2"
	LENGTH	33.2	33.1	33.3	32.7	33.2	33.0	32.9
	STICK-UP	3.2	3.2	3.2	3.3	3.1	3.0	3.2
	TOP ELEVATION	674.8	681.5	685.7	695.0	697.0	693.6	691.7
	BOTTOM ELEVATION	641.6	648.4	652.4	662.3	663.8	660.6	658.8
WELL SCREEN	DEPTH TOP/BOTTOM	10 / 30	10 / 29.9	10.2 / 30.1	9.4 / 29.4	10.2 / 30.1	10 / 30	9.8 / 29.7
	TYPE MATERIAL	PVC	PVC	PVC	PVC	PVC	PVC	PVC
	DIAMETER	2"	2"	2"	2"	2"	2"	2"
	LENGTH	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	SLOT SIZE							
	TOP ELEVATION	661.6	668.3	672.3	682.3	683.7	680.6	678.7
	BOTTOM ELEVATION	641.6	648.4	652.4	662.3	663.8	660.6	658.8
OPEN HOLE OR SAND/GRAVEL PACK	DEPTH TOP/BOTTOM							
	DIAMETER							
	LENGTH							
	TOP ELEVATION							
	BOTTOM ELEVATION							

5.2 Is there evidence of confining (low permeability) layers beneath the site? (Y/N) Y

If yes,

5.2.1 Is the areal extent and continuity indicated? (Y/N) Y

5.2.2 Is there any potential for saturated conditions (perched water) to occur above the uppermost aquifer? (Y/N) N

If yes, give details: The uppermost aquifer being monitored is sand lenses in glacial till which are saturated.

a) Should or is this perched zone being monitored? (Y/N) N

Explain _____

5.2.3 What is the lithology and texture of the uppermost saturated zone (aquifer)? The saturated zone is sand lenses in glacial clay tills.

5.2.4 What is the saturated thickness, if indicated? NOT INDICATED

5.3 Were static water levels measured? (Y/N) Y

If yes,

5.3.1 How were the water levels measured (check method(s)).

- Electric water sounder X
- Wetted tape ____
- Air line ____
- Other (explain) _____

5.3.2 Do fluctuations in static water levels occur? (Y/N) Y

If yes,

5.3.2.1 Are they accounted for (e.g. seasonal, tidal, etc.)? (Y/N) Y

If yes, describe: Seasonal fluctuations

5.3.2.2 Do the water level fluctuations alter the general ground-water gradients and flow directions? (Y/N) N

If yes,

5.3.2.3 Will the effectiveness of the wells to detect contaminants be reduced? (Y/N) N

Explain _____

_____

_____

5.3.2.4 Based on water level data, do any head differentials occur that may indicate a vertical flow component in the saturated zone? (Y/N) N

If yes, explain Horizontal flow occurs

_____

_____

5.4 Have aquifer hydraulic properties been determined? (Y/N) Y

If yes,

5.4.1 Indicate method(s):

- Pumping tests ____
- Falling/constant head tests X
- Laboratory tests (explain) _____

_____

_____

5.4.2 If determined, what are the values for:

- Transmissivity ____
- Storage coefficient ____
- Leakage ____
- Permeability ____
- Porosity ____
- Specific capacity ____

5.4.3 In cases where several tests were undertaken, were discrepancies in the results evident? (Y/N) N

If yes, explain _____

_____

5.4.4 Were horizontal ground-water flow velocities determined? (Y/N) Y

If yes, indicate rate of movement 0.1 Ft/day toward Kaskaskia River to west

6.0 Well Performance

6.1 Are the monitoring wells screened in the uppermost aquifer? (Y/N) Y

6.1.1 Is the full saturated thickness screened? (Y/N) Y

6.1.2 For single completions, are the intake areas in the: (check appropriate levels)

- Upper portion of the aquifer X
- Middle of the aquifer ____
- Lower portion of the aquifer ____

6.1.3 For well clusters, are the intake areas open to different portions of the aquifer? (Y/N) NA

6.1.4 Do the intake levels of the monitoring wells appear to be justified due to possible contaminant density and groundwater flow velocity? (Y/N) Y

7.0 Ground-Water Quality Sampling

7.1 Is a sampling (groundwater quality) program and schedule included? (Y/N) Y

7.2 Are sample collection field procedures clearly outlined? (Y/N) Y

7.2.1 How are samples obtained: (check method(s))

- Air lift pump ____
- Submersible pump ____
- Positive displacement pump ____
- Centrifugal pump ____
- Peristaltic or other suction-lift pump X
- Bailer ____
- Other (describe) ____

7.2.2 Are all wells sampled with the same equipment and procedures? (Y/N) Y

If no, explain ____

7.2.3 Are adequate provisions included to clean equipment after sampling to prevent cross-contamination between wells? (Y/N) Y

7.2.4 Are organic constituents to be sampled? (Y/N) Y

If yes,

7.2.4.1 Are samples collected with equipment to minimize absorption and volatilization? (Y/N) Y

If yes,

Describe equipment Peristaltic pump with seperate hose for each well is used

8.0 Sample Preservation and Handling

8.1 Have appropriate sample preservation and preparation procedures been followed (filtration and preservation where appropriate)? (Y/N) Y

8.2 Are samples refrigerated? (Y/N) Y

8.3 Are EPA recommended sample holding period requirements adhered to? (Y/N) Y

8.4 Are suitable container types used? (Y/N) Y

8.5 Are provisions made to store and ship samples under cold conditions (ice packs, etc.)? (Y/N) Y

8.6 Is a chain of custody control procedure clearly defined? (Y/N) Y

8.7 Is a specific chain of custody form illustrated? (Y/N) Y

If yes,

8.7.1 Will this form provide an accurate record of sample possession from the moment the sample is taken until the time it is analyzed? (Y/N) Y

9.0 Sample Analysis and Record Keeping

9.1 Is sample analysis performed by a qualified laboratory? (Y/N) Y

Indicate lab Stewart Lab - Knoxville, Tenn
USI LAB

9.2 Are analytical methods described in the records? (Y/N) Y

9.2.1 Are analytical methods acceptable to EPA? (Y/N) Y

9.3 Are the required drinking water suitability parametters tested for? (Y/N) N

9.4 Are the required groundwater quality parameters tested for? (Y/N) N

9.5 Are the required groundwater contamination indicator parameters tested for? (Y/N) Y

9.6 Are any analytical parameters determined in the field? (Y/N) N

Identify:

- pH ____
- Temperature ____
- Specific conductance ____
- Other (describe) ____

9.7 Is a plan included to record information about each sample collected during the groundwater monitoring program? (Y/N) N

9.7.1 Are field activity logs included? (Y/N) N

9.7.2 Are laboratory results included? (Y/N) Y

9.7.3 Are field procedures recorded? (Y/N) Y

9.7.4 Are field parameter determinations included? (Y/N) N

9.7.5 Are the names and affiliation of the field personnel included? (Y/N) Y

9.8 Are statistical analyses planned or shown for all water quality results where necessary? (Y/N) Y

9.8.1 Is an analysis program set-up which adheres to EPA guidelines? (Y/N) Y

9.8.2 Is Student's t-test utilized? (Y/N) Y
If other evaluation procedure used, identify ____

9.8.3 Are provisions made for submitting analysis reports to the Regional Administrator? (Y/N) N

10.0 Site Verification

10.1 Plot Plan indicating the locations of various facility components, ground-water monitoring wells, and surface waters? (Y/N Y)

10.1.1 Is the plot plan used for the inspection the same as in the monitoring program plan documentation? (Y/N) Y

If not, explain ____

10.1.2 Are all of the components of the facility identified during the inspection addressed in the monitoring program documentation? (Y/N) Y

If not, explain _____

_____

10.1.3 Are there any streams, lakes or wetlands on or adjacent to the site? (Y/N) Y

If yes, indicate distances from waste management areas _____

_____

_____

10.1.4 Are there any signs of water quality degradation evident in the surface water bodies? (Y/N) N

If yes, explain _____

_____

_____

10.1.5 Is there any indication of distressed or dead vegetation on or adjacent to the site? (Y/N) N

If yes, explain _____

_____

_____

10.1.6 Are there any significant topographic or surficial features on or near the site (e.g., recharge or discharge areas)? (Y/N) Y

If yes, explain Waste gypsum piles and flyash disposal area on-site.

10.1.7 Are the monitor well locations and numbers in agreement with the monitoring program documentation? (Y/N) Y

If no, explain _____

_____

10.1.7.1 Were locations and elevations of the monitor wells surveyed into some known datum? (Y/N) Y

If not, explain _____

_____

10.1.7.2 Were the wells sounded to determine total depth below the surface? (Y/N) N

If not, explain Hoses used in sampling were located inside the wells

10.1.7.3 Were discrepancies in total depth greater than two feet apparent in any well? (Y/N) Unknown.

If yes, explain Did not check total depth

10.1.8 Was ground water encountered in all monitoring wells? (Y/N) Y

If not, indicate which well(s) were dry Samples have been collected from all monitor wells

10.1.9 Were water level elevations measured during the site visit? (Y/N) N

If yes, indicate well number and water level elevation _____

If not, explain _____

APPENDIX D

WAIVER DEMONSTRATION TECHNICAL INFORMATION FORM

Company Name: U.S. Industrial Chemicals; EPA ID.#: 005078126

Company Address: P.O. Box 218
Tuscola, IL. 61953

Inspector's Name: Rick Hersemann; Date: 10/26/82

1.0 Site Characterization

Regional Map (U.S.G.S., 7.5 min. Topographic Quadrangle Map, or similar) showing facility location with water supply wells near the facility indicated.

1.0.1 Are there discharging wells near the facility? (Y/N) Y

If yes, give distances to wells There are 3 deep well injection wells which inject waste near the facility

1.0.1.1 Which aquifers in the vicintiy provide water supplies? Tuscola receives some of its water supply from Silurian Dolomite

1.0.1.2 What is the estimated withdrawal (diversion) rate from these aquifers? UnKnown

1.0.2 Are there any streams, rivers, or lakes near the facility? (Y/N) Y

1.0.2.1 If so, indicate approximate distances from the facility. Kaskaskia River - 1/4 mile west
Onsite surface impoundment north - 1/4 mile
2 Surface impoundments east - 1/4 mile

1.1 Regional Hydrogeologic/Surficial Geologic Map

1.1.1 Is the surficial geology adequately illustrated? (Y/N) Y

1.1.2 Are areas of recharge/discharge shown? (Y/N) N

1.1.3 Is regional groundwater flow direction indicated? (Y/N) Y

1.1.4 Are the water table or potentiometric contours logical? (Y/N) Y

1.2 Map of Facility (scale at least 1" = 200'), showing the locations of facility components (e.g., surface impoundments, and disposal areas), and groundwater monitoring wells, springs, seeps, streams, etc.

1.2.1 Is the facility a multi-component facility? (Y/N) N

1.2.2 Are locations of test borings (or pits) and observation wells shown? (Y/N) Y

1.2.2.1 Are borings, pits, or wells located in or near the waste management area? (Y/N) Y

If yes,

1.2.2.2 Do the borings, pits, or wells appear to be of such number, and depth to adequately characterize the substrate? (Y/N) N

Give brief detail Downgradient monitor wells are located too far from waste boundary to detect prompt migration of hazardous waste.

1.3 Boring Logs and Geologic Cross Sections

1.3.1 Are there logs of the borings or test pits? (Y/N) Y

1.3.2 How are the sub-surface materials described: (check as appropriate)

1.3.2.1 Unified Soil Classification System X

1.3.2.2 U.S.D.A. Soil Classification System ____

1.3.2.3 Burmeister Classification System ____

1.3.2.4 Other (explain)_____

_____

1.3.3 Are geologic cross-sections included? (Y/N) N

1.3.4 Is there evidence of confining (low permeability) layers beneath the facility? (Y/N) Y

2.0 Waste Characterization

2.1 Has the waste material been stabilized in any way to preclude the potential of leachate being generated? (Y/N) N

If yes, briefly explain methods_____

_____

2.2 Have specially engineered features been incorporated into the facility design to minimize the migration of leachate? (Y/N) N

If yes, briefly explain _____

_____

3.0 Water Balance

3.1 Is precipitation data included? (Y/N) N

3.1.1 How is it tabulated? (check one)

- Daily ____
- Weekly ____
- Monthly ____
- Annually ____

3.1.2 Source of data (check one)

- U.S. Weather Service ____
- State Agency ____
- Other Source ____
  Identify _____

_____

3.1.3 Length of record, in years ____

3.1.4 Distance of measuring point from the facility ____

3.2 Is actual evapotranspiration (AET) data included? (Y/N) N

3.2.1 Is the source of AET data indicated? (Y/N) N

If yes, give reference _____

_____

3.3 Is run-off calculated? (Y/N) N

3.3.1 Is the technique referenced? (Y/N) N

If yes, give reference _____

_____

3.4 Is infiltration data included? (Y/N) N

3.4.1 Is source of data referenced? (Y/N) ____

If yes, give reference _____

_____

3.5 Is there a positive net infiltration recorded? (Y/N) N

If yes, how much? _____

4.0 Unsaturated Zone Characteristics

4.1 Has the applicant demonstrated that the unsaturated zone will isolate any waste derived leachate from the water table, chemically or physically? (Y/N) N

Briefly describe mechanism(s) _____

_____

_____

4.2 Physical Properties

4.2.1 Has the applicant defined the unsaturated thickness and areal variability? (Y/N) N

Briefly describe _____

_____

_____

4.2.2 Has the primary and secondary porosity (if any) of the unsaturated zone been determined? (Y/N) N

Briefly describe _____

_____

4.2.3 Have hydraulic conductivity curves for each sediment type comprising the unsaturated zone been established? (Y/N) N

4.2.4 Have textural analyses been performed? (Y/N) N

4.2.5 Have bulk densities been estimated? (Y/N) N

4.3 Chemical Properties

4.3.1 Has cation exchange been cited as an attenuation means? (Y/N) Y

If yes,

4.3.1.1 Type of clay Light brown gravelly clay calcareous

4.3.1.2 Percent of clay ____

4.3.1.3 Percent of organics ____

4.3.1.4 pH of materials 7.5 - 8.0

4.3.2 Have other attenuation mechanisms, if any, been adequately explained? (Y/N) Y

If yes, cite mechanism:

4.3.2.1 Biodegradation ____

4.3.2.2 Complexation ____

4.3.2.3 Precipitation ____

4.3.2.4 Chelation ____

4.3.2.5 Other Neutralization

5.0 Saturated Zone Physical Characteristics

5.1 Have the saturated zone hydrologic properties been determined? (Y/N) Y

If yes, were pumping tests performed to determine (check appropriate determinations and give results)

5.1.1 Transmissivity ____

5.1.2 Hydraulic Conductivity ____

5.1.3 Storage Coefficient ____

5.1.4 Leakage 2.3 gal/day vertical
80 gal/day horizontal

5.2 How many tests were performed? ____

5.2.1 The duration(s) of test(s) ____

5.2.2 The length(s) of the recovery test(s) ____

5.3 Were other insitu tests performed? (Y/N) Y

(check appropriate tests)

5.3.1 Falling head tests X

5.3.2 Constant head tests ____

5.3.3 Packer tests ____

5.3.4 Other ____

Explain ____

____

5.4 Was the saturated thickness determined? (Y/N) N

5.5 Are static water level measurements included? (Y/N) Y

5.6 Is a site water table (equipotential) contour map included? (Y/N) Y

5.6.1 Does the contour map appear logical based on the presented data and topography? (Y/N) Y

5.6.2 Are groundwater flowlines indicated? (Y/N) Y

5.6.3 Are hydraulic gradients included? (Y/N) Y

5.6.4 Are flow velocities included? (Y/N) Y

5.7 Is there any indication of vertical flow in the saturated zone? (Y/N) Y

5.8 Saturated Zone Chemical Properties of Ground Water

5.8.1 Have water quality analyses been performed to establish background data? (Y/N) N

5.8.2 Does background information indicate that the aquifer may be degraded in any way? (Y/N) N

6.0 Computer Modeling

6.1 Was a computer simulation utilized in the demonstration? (Y/N) N

Check appropriate model:

6.1.1 Mass transport ____

6.1.2 Flow model ____

6.2 Type of model? (check appropriate type)

6.2.1 Numerical ____

6.2.2 Analytic ____

6.2.3 Reference for model? _____

_____

_____

6.2.4 Does the data appear to warrant the use of modeling techniques? (Y/N) ____

If not, explain _____

_____

_____

	Yes	No	NI*	Remarks

8. Has the owner or operator observed the National Fire Protection Association's buffer zone requirements for tanks containing ignitable or reactive wastes?

   Tank capacity: _____ gallons

   Tank diameter: _____ feet

   Distance of tank from property line _____ feet

   (See table 2 - 1 through 2 - 6 of NFPA's "Flammable and Combustible Liquids Code - 1977" to determine compliance.)

K

SURFACE IMPOUNDMENTS

Facility Name: U.S. Industrial Chemical Date of Inspection: 4-10-81

	Yes	No	NI*	Remarks
1. Do surface impoundments have at least 60 cm (2 feet) of freeboard?	✓			
2. Do earthen dikes have protective covers?	✓	✓		Natural Grass Grasses
3. Are waste analyses done when the impoundment is used to store a substantially different waste than before?			✓	~~Always~~ has the same waste through it.
4. Is the freeboard level inspected at least daily?	✓			
5. Are the dikes inspected weekly for evidence of leaks or deterioration?	✓			only one end diked
6. Are reactive & ignitable wastes rendered non-reactive or non-ignitable before storage in a surface impoundment? (If waste is rendered non-reactive or non-ignitable, see treatment requirements.)		✓	✓	N/A waste is corrosive.
7. Are incompatible wastes stored in different impoundments? (If not, the provisions of 40 CFR 265.17(b) apply.)			✓	only one waste stream at this time.

REMARKS

Use this section to briefly describe site activities observed at the time of the inspection. Note any possible violations of Interim Status Standards.

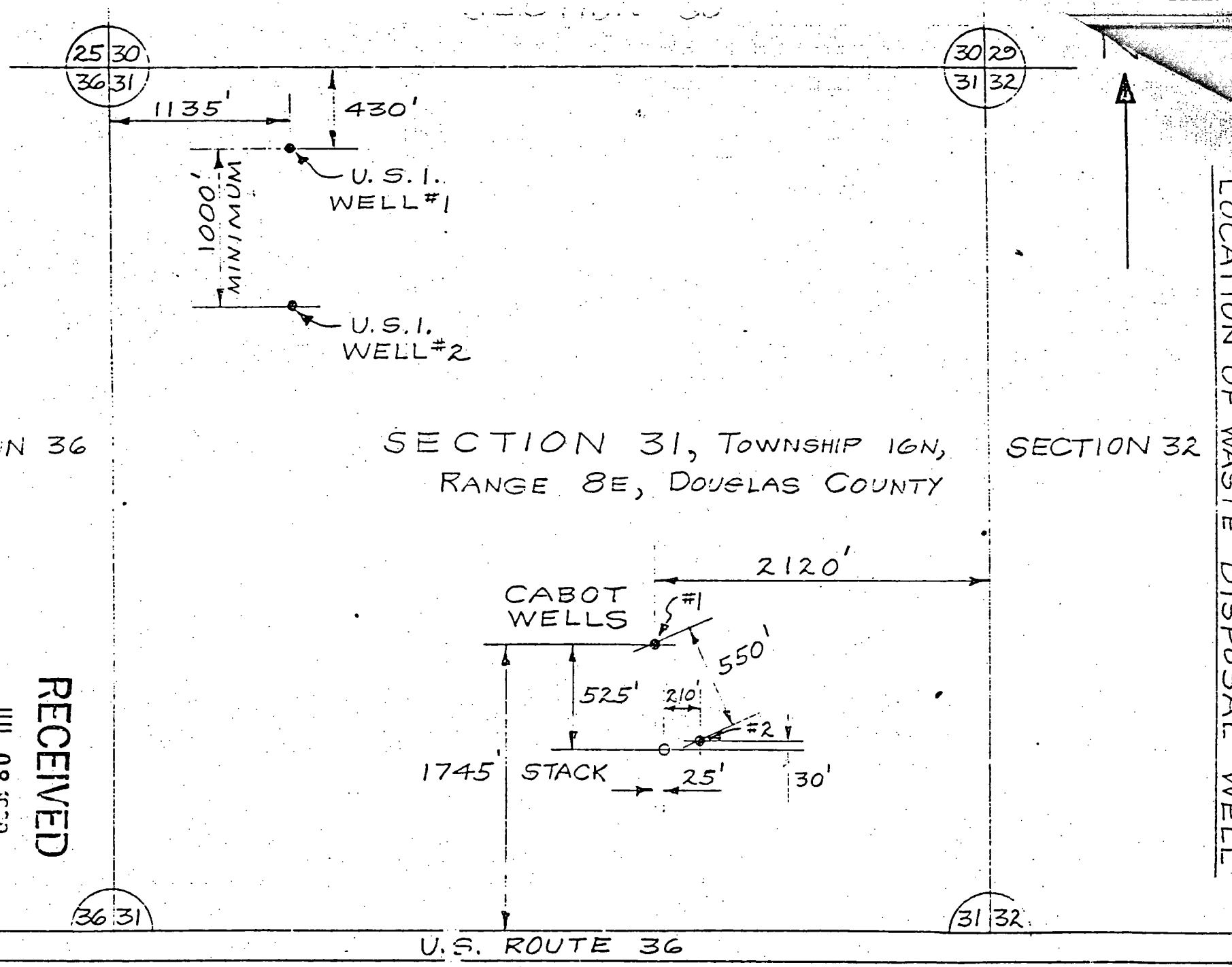
Facility's waste water is a low pH (around 2) that goes through a staging lagoon before neutralization. The water is then discharged to the Kaskaskia river through their NPDES Permit (# IL 0000141). The lagoon is diked on one side only with prairie grasses growing out it.

The facility also has a type of thermal treatment for another waste. This waste is a variety of organic peroxides of the general formula R-O-O-R that a mixed with kerosene. The mixture is less than 1% of the active ingredient.

The thermal treatment consists of injecting the kerosene, under pressure, into a steam aided smokeless flare. The flare is not efficient for complete combustion of liquids. The flare is designed to handle low halogenated compounds. The kerosene should burn fairly well, especially with the the organic peroxides which aid in combustion when subject to heating. When the peroxides are dry they have a relatively low flash point (80°C or less) and are considered highly flammable and reactive when dry.

The flare is covered by the State of Illinois ~~EPA~~ EPA, Division of Air Pollution Control permit # 72-12-11137. Also the Air permit section did not see any problems with this procedure.

The facility stated they have been doing this type of disposal for 10 years or more. Also they have closed circuit TV monitors on the flares.



LOCATION OF WASTE DISPOSAL WELL

VOLUME OF LIQUID WASTE DISPOSED VIA DEEP WELL IN GALLONS

1978	Allied	Cabot #1	Cabot #2	USI	NGPC, Herscher	NGPC, St.Elmo
Jan	1,491,190	105,280	6,078,278	10,211,000	355,820	52,916
Feb	1,431,730	53,990	6,003,551	2,763,000	378,060	400,238
Mar	2,214,630	8,680	7,652,164	4,166,000	593,715	484,985
Apr	1,870,120	0	5,378,640	12,069,000	447,150	116,627
May	2,536,000	0	5,679,540	13,041,000	332,365	80,738.5
Jun	2,382,980	0	6,195,698	9,929,000	445,201	84,995
Jul	2,205,970	0	7,854,436	10,501,000	487,841	43,637.5
Aug	1,948,570	0	7,901,412	8,878,000	509,113	78,197
Sep	1,768,410	61,440	6,593,889	11,753,000	419,687	56,451.5
Oct	1,542,460	873,030	4,510,764	15,543,000	343,897	34,695.5
Nov	1,204,190	17,200	7,246,804	15,783,000	281,968	204,517.5
Dec	1,667,060	25,050	6,895,692	17,134,000	274,870	409,054.5
Total	22,263,310	1,144,670	77,990,868	131,771,000	4,869,687	2,047,053
1979						
Jan	2,325,470	11,320	7,002,237	16,961,000	288,561	349,352
Feb	1,687,900	21,930	7,564,443	15,227,000	386,065	660,212
Mar	3,121,020	18,110	772,326	16,311,000	512,162	970,398
Apr	2,314,370	10,730	8,062,462	15,045,000	288,303	711,040
May	1,876,030	13,200	9,073,316	14,362,000	443,884	156,991
Jun	1,352,390	34,830	7,854,597	15,504,000	445,445	0
Jul	2,059,690	1,528,680	5,448,075	11,160,000	507,865	0
Aug	2,753,720	135,490	7,502,405	12,181,000	451,594	0
Sep	2,084,980	0	6,967,429	2,395,000	376,002	58,190
Oct	2,242,540	0	7,288,755	8,110,000	421,640	0
Nov	1,932,870	675,800	7,694,953	11,891,000	336,268	0
Dec	2,054,510	573,990	645,865	9,685,000	404,500	395,825
Total	25,805,490	3,024,080	75,876,863	148,832,000	4,862,289	3,302,008

WASTE DISPOSAL WELL - U. S. Industrial Chemicals Company, Tuscola

1. Name of company, mailing address, county, phone number, and name of persons to contact

U. S. Industrial Chemicals Company
Post Office Box 218
Tuscola, Illinois 61953

Douglas County

Telephone: (217) 253-3311

Robert L. Kylander - Technical Manager

L. R. Hays - Acting Engineering Manager

2. Location of Well

Tuscola, Illinois, Douglas County. 430 ft. South and 1135 ft. east of the northwest corner of Section 31, T.16N., R.8E. Ground elevation is 693 ft. above sea level.

3. Date injection began

The well is completed in August 1970. Injection began on September 1, 1970.

4. Well data

The total depth is 5509 ft. below the ground surface.

Depth, feet	Hole diameter	Casing diameter and depth	Cementing
0-210	17 1/2"	13 3/8" 0-204 ft.	cemented
210-2796	12 1/4"	9 5/8" 0-2795 ft.	cemented
2796-5004	8 3/4"	7" 0-5000 ft.	cemented
5004-5509	6 1/4"		
5000-5509	6 1/4"	Open hole	
Injection tube		4" 0-5015 ft.	

Protection of casing, injection tube and annulus: a 7" Otis Packer is set at 4990 ft. between injection tubing and 7" casing. Injection is of carbon steel whose inside is lined with a PVC lining. The annulus area is filled with fresh water and treated with two barrels of Coretron (no Chromium). Wastes are stored in lagoons before injection. No filter.

5. Geological data

Geological Column	Interval, ft.	Function	TDS, mg/l
Glacial drift	0-200	(K.B.elevation: 708')	
Penn	200-1246		
Miss. Cypress Ss.	1246-1302		
Paint Creek form.	1302-1318		
Bethel-Benoist form.	1318-1384		
Aux Vases, Ss.	1384-1425		
St. Genevieve, ls.	1425-1458		
Rosiclare form.	1458-1472		
Fredonia, ls.	1472-1550		
St. Louis, ls.	1550-1706		
Salem, ls.	1706-1786		
Warsaw, ls.	1786-1820		
Osage (Borden) Shales	1820-2200		
Carper, Ss.	2200-2296		
Rockford, ls.	2296-2314		
New Albany, Sh. DON.	2314-2406		
Devonian, ls.	2406-2470		
Silurian, dolo.	2470-3105		18,125
Ordovician, Maquoketa, Sh.	3105-3313	Caprock	
Galena-Platteville, gr,ls.	3313-3826		
Glendwood (Joachim) dolo.	3826-3886		
St. Peter, Ss.	3886-4064		
Shakopee, dolo.	4064-4124		
New Richmond (?)SS	4124-4400		
Oneota, dolo.	4400-4984		
Cambrian, Eminence, dolo.	4984-5074	Injection zone	
Potosi, dolo.	5074-5294	Injection zone	
Franconia, dolo.	5294-5524+	Injection zone	

6. Waste data

Source	Type
Rainfall leachate from 80 acres of waste gypsum	Ca So_4, 3% phosphoric acid, 0.5-1.0% H_2SO_4, 0.7% Fluoride.
Ion exchange resin regeneration waste	
Cooling tower and boiler blowdown water	
Plant wastes containing water soluble organic material	
Laboratory wastes, including mercury compounds	

Waste quality: Density 1.00-1.03, low pH (1-2), high TDS (20,000-40,000 mg/l), Suspended solids (10-80 mg/l), BOD, fluoride (1,000-7,000 mg/l), Sulfur (0.2-1.0%), phosphorus (0.2-0.6%), organic carbon (200-1,500 mg/l). It is a highly corrosive waste.

7. Operational data

Maximum well head injection pressure: 250 psig
Maximum injection rate: 400 gpm
Monthly operating reports are required.

8. Problem encountered

Due to corrosiveness of the waste, leaks occasionally develop through the corrosion of the injection tubing. Also, lower portion, below the packer, of the 7" casing was completely corroded by the waste water in the past.

9. Permits issued

Permit #1970-EA-517, dated August 4, 1970, purpose of installing and operating a deep well injection facility and all necessary surface works, waste will be injected into the Eminence-Potosi dolomite and Franconia formations.

Permit #1974-EA-132-OP, dated January 24, 1974, to operate an existing industrial waste disposal well and necessary surface equipment, duration is one year.

Permit #1974-EA-343-OP, dated February 27, 1974, purpose of Superceding Permit #1974-EA-132-OP, duration is one year.

Permit #1975-EA-242-OP, dated May 14, 1975, purpose of renewing #1974-EA-343-OP, duration is one year.

Permit #1976-EA-273-OP, dated March 10, 1976, purpose of renewing Permit #1975-EA-242-OP, duration is one year.

Permit 1977-UIC-3-OP, dated May 13, 1977, purpose to operate deep well injection facility, replaces 1976-EA-273-OP, one year duration.

Permit 1978-UIC-4-OP, dated May 12, 1978, purpose to operate deep well injection facility, replaces 1977-UIC-3-op, one year duration.

Permit NPDES IL0000141, dated January 5, 1979, purpose to operate deep well injection facility, replaces 1978-UIC-4-OP, expires March 31, 1981.

ANALYSIS DATA

WELL U.S.I. CHEMICALS NO.1 TUSCOLA, ILL. MONTH April, 1983

	WEEK ENDING DATES				
	4-3-83	4-10-83	4-17-83	4-24-83	
SPEC. GRAV.@25°c	1.009	1.010	1.010	1.012	
P H	3.3	3.3	3.1	3.0	
T.D.S.-Mg/L	5005	5506	5654	5331	
T.O.C.-Mg/L	88	96	89	93	
S.S.-Mg/L	25	36	43	51	
P-Mg/L	557	535	464	605	
SO_4-Mg/L	1882	1982	1681	2083	
F-Mg/L	130	175	130	135	
C_L-Mg/L	60	80	60	60	
C_A-Mg/L	94	122	136	208	
Mg-Mg/L	160	153	137	165	
C_R-Mg/L	0.06	0.08	0.09	0.14	
NA-Mg/L					
K-Mg/L					
Hg-PPB					

Sample Temperature °F 54 (4-24-83)
Dynamic Viscosity @ 100°F ASTM D445-72 0.7562

28-191-374

ANALYSIS DATA

WELL U.S.I. CHEMICALS NO.1 TUSCOLA, ILL. MONTH February, 1983

	WEEK ENDING DATES				
	2-6-83	2-13-83	2-20-83	2-27-83	
SPEC. GRAV. @25°c	1.010	1.011	1.009	1.010	
PH	5.6	5.8	6.2	6.0	
T.D.S.-Mg/L	4719	4840	3959	4506	
T.O.C.-Mg/L	168	147	126	179	
S.S.-Mg/L	73	74	30	19	
P-Mg/L	306	383	363	375	
SO_4-Mg/L	1687	1450	1620	1655	
F-Mg/L	45	31	57	28	
C_L-Mg/L	40	30	60	80	
C_A-Mg/L	160	147	131	135	
Mg-Mg/L	131	118	111	127	
C_R-Mg/L	0.1	0.1	0.1	0.1	
N_A-Mg/L					
K-Mg/L					
Hg-PPB					

Sample Temperature °F 44 (2-13-83)

Dynamic Viscosity @ 100°F ASTM D445-72 0.7726

28-191-374

0418080 2- Douglas Co.
Tuscola / USI

U.S. INDUSTRIAL CHEMICALS CO.

Division of National Distillers and Chemical Corporation • P.O. Box 218, Tuscola, Illinois 61953 • (217) 253-3311

May 6, 1983

Illinois Environmental Protection Agency
Division of Land Pollution Control
Manager, Technical Operations
2200 Churchill Road
Springfield, Illinois 62706

Dear Sir:

USI DISPOSAL WELL NO. 1
NPDES PERMIT NO. IL 0000141

During April 1983, the injected volume was 14.1 million gallons and the cumulative is 1,635.886 million gallons.

Operation was normal.

Very truly yours,

L. R. Hays
Engineering Manager

mh

Attachments

USI

U.S.I.

NPDES Permit No. IL0000141

Illinois Environmental Protection Agency

Division of Water Pollution Control

2200 Churchill Road

Springfield, Illinois 62706

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit

Issue Date: Dec. 6, 1978
Effective Date: Jan. 5, 1979

Expiration Date: March 31, 1981

Permittee: U.S. Industrial Chemicals Company

Location: Route 45, Tuscola, Illinois (Douglas County)

Receiving Waters: Kaskaskia River

In compliance with the provisions of the Illinois Environmental Protection Act, the Chapter 3 Rules and Regulations of the Illinois Pollution Control Board, and the FWPCA, the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:JDR:sh/sp3867a

ATTACHMENT B2

FINAL

Effluent Limitations and Monitoring

All inquiries should be directed to Mr. Rauf Piskin, Manager, Hydrogeology Unit, Technical Operations Section, Division of Land/Noise Pollution Control.

The Standard Conditions of issuance of the permit are attached.

The Special Conditions of issuance of this permit are on the following pages.

This permit is issued for the injection of waste at a maximum rate of 400 gpm and at a maximum injection pressure of 250 psig.

The wastes to be injected consist of:

1. rainfall leachate from 80 acres of waste gypsum;
2. ion exchange resin regeneration waste;
3. cooling tower and boiler blowdown water;
4. plant wastes water soluble organic material; and,
5. laboratory wastes, including mercury wastes.

The quantity and chemical quality of wastes to be injected shall not exceed those maximum volumes and concentrations, previously submitted to the Agency, in the permit application data.

The injection wastes shall be sampled daily (if waste is injected) at the wellhead, and a weekly composite sample made and analyzed. The analysis report shall include the following parameters and any parameters which are in significant amounts or which are needed to adequately characterize the waste:

pH	Chloride
Total dissolved solids	Calcium
Total organic carbon	Magnesium
Phosphorus	Chromium
Sulfate	Suspended solids
Fluoride	

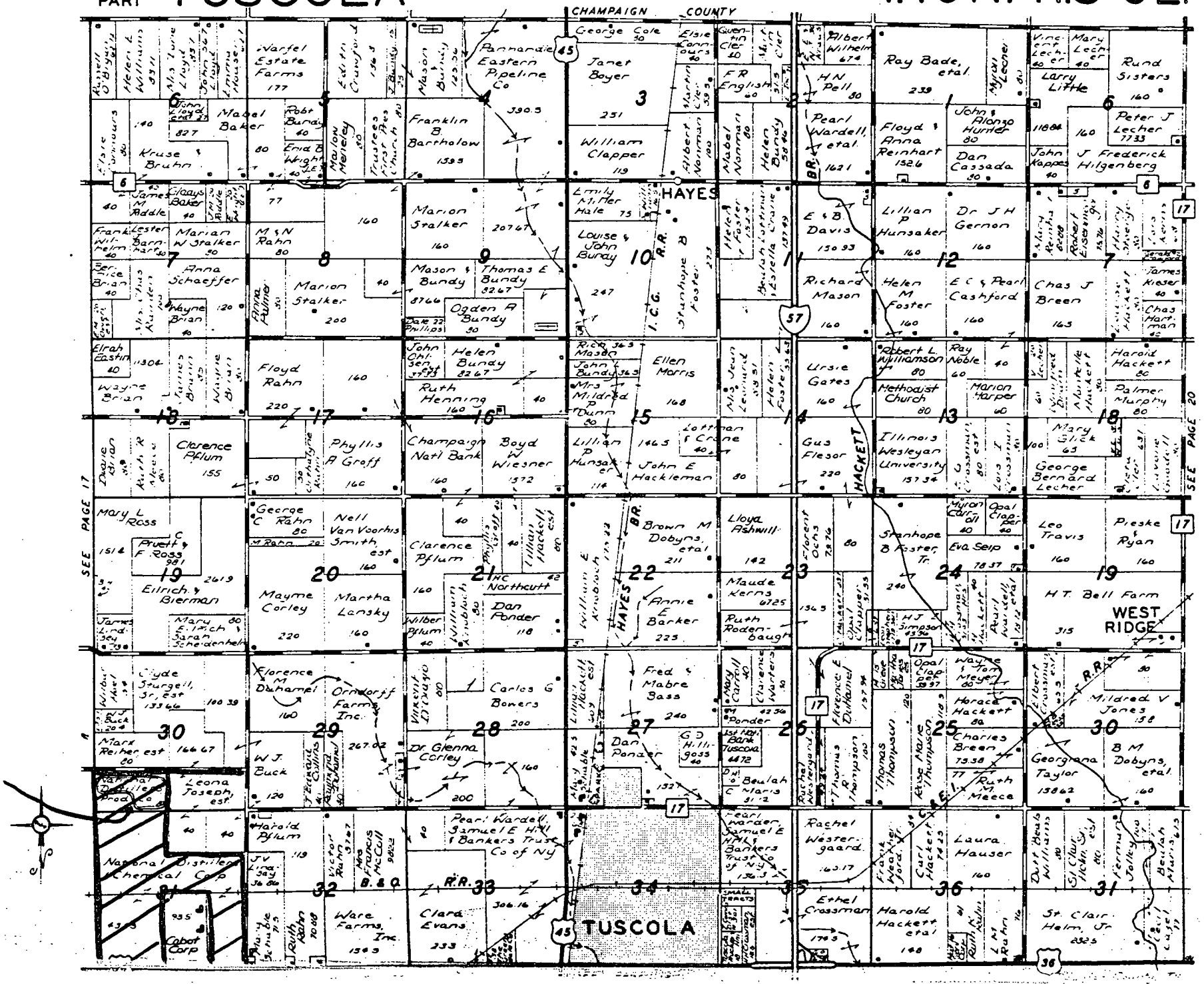
Each calendar quarter, one weekly composite waste sample shall be analyzed for potassium, mercury and sodium.

Tuscola / U.S.I.

NORTH PART

TUSCOLA

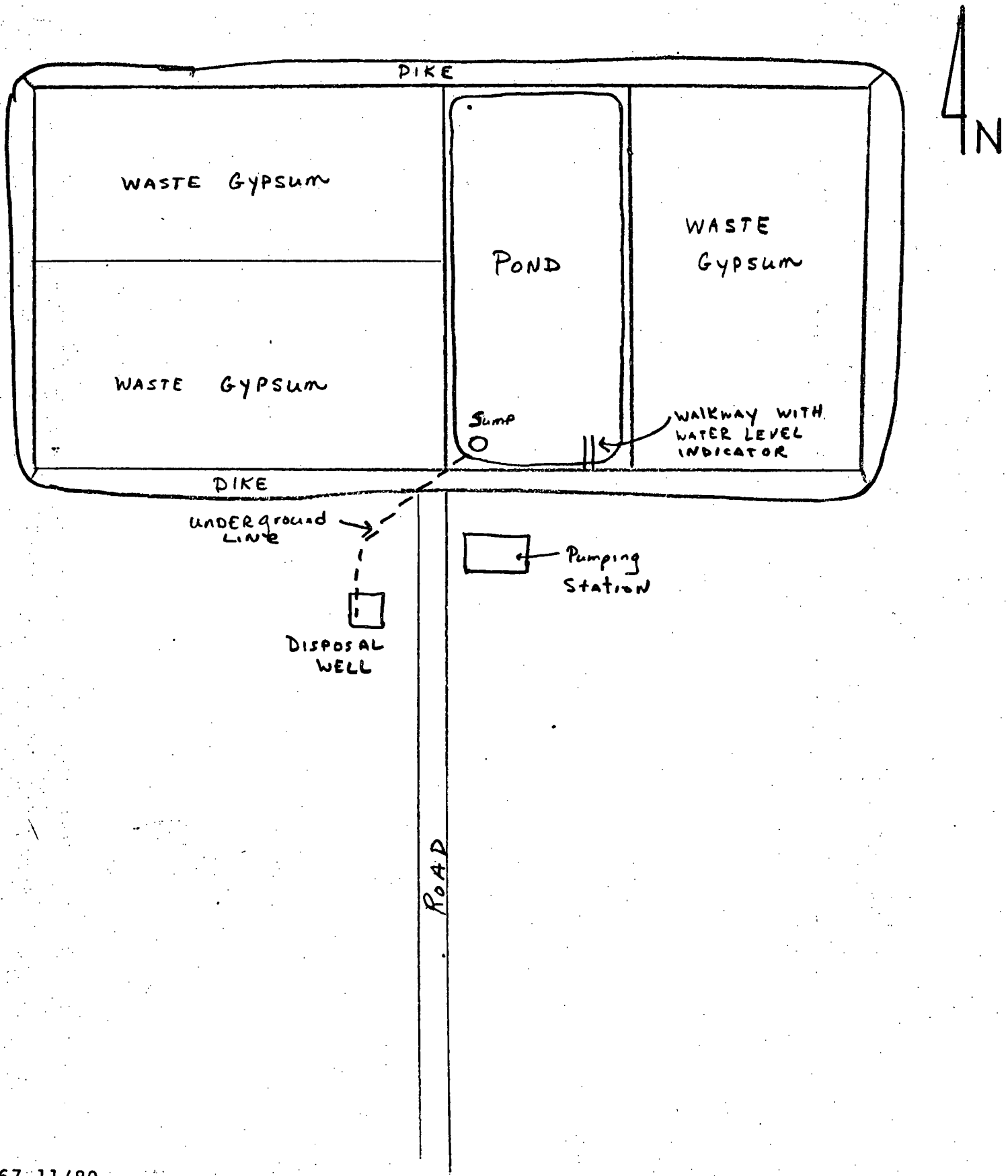
T.16N.-R.8-9E.



DOUGLAS Co. - LPC 04180802 DATE:

Tusco/A / USI TIME:

DEEP WELL



PC 67 11/80

NOT TO SCALE

ILLINOIS EPA
Environmental Protection Agency
4500 S. Sixth Street Springfield, IL. 62706
Ph. (217) 786-6892

March 1, 1983

Refer to: LPC #04180802 - Douglas County
Tuscola/U.S. Industrial Chemicals Co.
ILD #005078126

U.S. Industrial Chemicals Company
P. O. Box 218
Tuscola, Illinois 61953

ATTENTION: Mr. T. J. Tadler
Plant Manager

Dear Mr. Tadler:

An inspection of your facility was conducted by a representative of the Illinois Environmental Protection Agency (IEPA) on October 26, 1982. The purpose of the inspection was to determine your facility's compliance with the 35 Illinois Administrative Code (35 IL. A. C.), Part 725, Subpart F, Groundwater Monitoring requirements. The following is a list of Subpart F deficiencies that were noted during the inspection.

... 35 IL. A. C., Section 725.191 -- More geologic information is needed to determine your facility's impact on the quality of the groundwater in the uppermost aquifer underlying your facility. Information needed for evaluation includes:

1. Geologic cross-sections of facility
2. Map of facility (scale 1 inch = 200 feet) showing location of surface impoundment, monitor wells, surface water and drainage, and contour lines.

... The three downgradient monitor wells were determined to be located too far from the waste boundary of the surface impoundment to comply with 725.191(a)(2). Downgradient monitor wells should be installed in a manner that "their number, locations and depths must ensure that they immediately detect any statistically significant amounts of hazardous waste or hazardous waste constituents that migrate from the waste management area to the uppermost aquifer".

Your facility has implemented an alternate groundwater monitoring program which waives sampling of parameters listed under 725.192(b)(1) and 725.192(b)(2). Your Part A application to the U.S.E.P.A. dated November 17, 1980, states that hazardous wastes D002 (corrosive) and D007 (E.P. Toxic-Chromium) enter your surface impoundment. A request is made for submittal of laboratory analyses of all waste streams entering the surface impoundment and an analysis of the sludge from the bottom of the surface impoundment. A review of the analyses will be made to determine if your alternate sampling program of parameters listed in 725.192(b)(3) is appropriate.

You are hereby requested to submit to this office, within 15 days of receipt of this letter, a description of steps taken to correct the above deficiencies. Failure to correct these deficiencies may result in enforcement actions. Please send your reply to the above address.

Should you have any questions concerning this matter, please contact Mr. Rick Hersemann of my staff at the above number.

Sincerely,

Glenn D. Savage Jr.

Glenn D. Savage, Jr.
Acting Central Region Manager
Land Field Operations Section
Division of Land Pollution Control

GDS/RAH/cp

cc: DLPC/Division File
DLPC/FOS, Central Region
USEPA/Region V